ABSTRACT

Generally, an Eigen network and system using same are disclosed that use Principal Component Analysis (PCA) in a middle

5   (or "hidden") layer of a neural network. The PCA essentially takes the place of a Radial Basis Function hidden layer. A classifier comprises inputs that are routed to a PCA device. The PCA device performs PCA on the inputs and produces outputs (entitled "PCA outputs" for clarity). The PCA outputs are

10   connected to output nodes. Generally, each output is connected to each output node. Each connection is multiplied by a weight, and each output node uses weighted PCA outputs to produce an output (entitled a "node output" for clarity). These node outputs are then generally compared in order to assign a class to

15   the input. A system uses the PCA classifier to classify input patterns. In a third aspect of the invention, a PCA classifier is trained in order to determine weights for each of the connections that are connected to the output nodes.